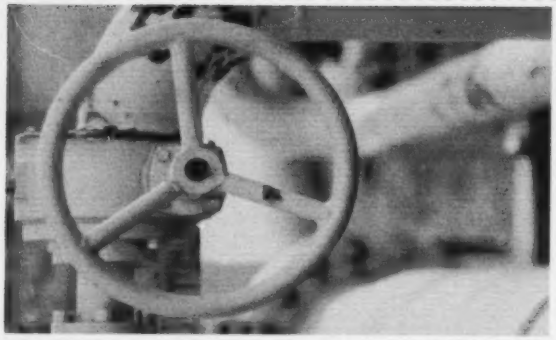
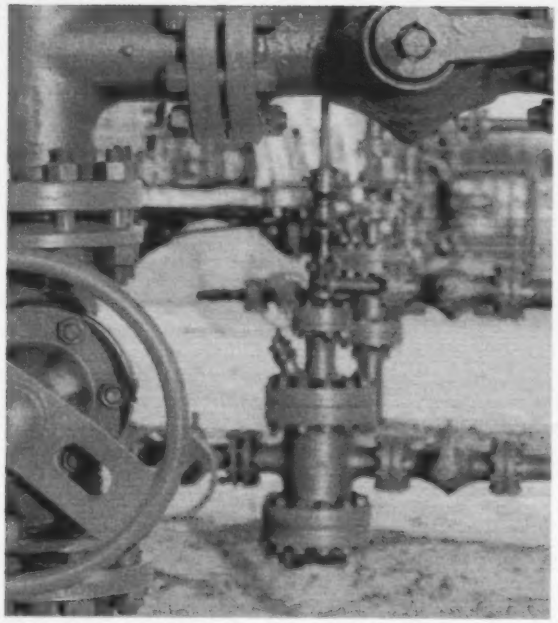


ALBERTA OIL & GAS INDUSTRY QUARTERLY UPDATE



WINTER 2016

Reporting on the period: Oct. 19, 2016 to Dec 2, 2016

All about oil and gas

WHILE ALBERTA'S petroleum sector has felt the negative impact of low crude oil prices and a persistently weak natural gas market, the province's oil and gas industry is poised to rebound once commodity prices improve to sustainable levels.

In fact, technological advancement has set the stage for future growth in Alberta's non-oil sands oil and natural gas industry. Until the turn of the last decade, the sun had slowly been setting on Alberta's conventional oil and natural gas industry. Oil production had declined from a peak of 1.43 million barrels per day (bbls/d) in 1973 to a low of around 460,000 bbls/d in 2010.

But things, low commodity prices notwithstanding, have changed for the better, as increased implementation of long horizontal wells and multistage fracturing in tight oil plays across the province—not to mention attractive provincial royalty incentives to encourage drilling—have allowed industry to extract crude from resource bases that had previously been essentially untapped.

In fact, the tight oil revolution that began in the U.S. gradually moved north into Alberta, marking the dawning of a new day for oil and natural gas exploration and production in the province.

In Alberta, the technology is being used in an increasing number of oil plays. Among the most advanced plays are the Cardium in west-central Alberta, the Beaverhill Lake Carbonates near Swan Hills and the Viking in east-central Alberta.

More importantly, emerging liquids-rich plays like the Montney and Duvernay shale show great promise. In fact, the Duvernay play may have the most potential going forward.

Although drilling activity has slowed given the current commodity price environment, many producers are still reporting strong results and liquids yields from their Duvernay and Montney programs.

The Duvernay is often compared to the prolific Eagle Ford of Texas because they are both shale plays that offer a full spectrum, from dry gas through liquids-rich gas to oil. Many other shale plays, such as the Horn River Basin in B.C. and the Marcellus or Barnett south of the border, are much more gas-focused.

In terms of the potential size of the play area, the richness of the source rock and even some of the early production results, the Duvernay "is well on its way to being as big or bigger than the Eagle Ford," Canadian Discovery has proclaimed.

The increase in horizontal drilling activity is expected to offset the steep decline in Alberta conventional production that would otherwise be expected.

The Alberta Energy Regulator (AER) estimates the remaining established reserves of conventional crude oil in Alberta to be 1.8 billion barrels, representing more than one-third of Canada's remaining conventional reserves. This increase of 1.6 per cent over the 2013 estimate is from all reserve adjustments less production in 2014.

According to the AER, in 2015 Alberta produced 68 per cent of Canada's natural gas and 80 per cent of Canada's oil and equivalent. More than 60 per cent of Canada's total oil and equivalent production was marketable bitumen.

Shale gas production in Alberta continued to increase in Alberta in 2015, growing by 32.1 per cent to 5.9 million cubic metres per day (208 mmcf per day) from 4.5 million cubic metres per day (159 mmcf per day) in 2014.

In 2016, shale production is forecast to grow by another 25.4 per cent to 7.4 million cubic metres per day, reaching 12.3 million cubic metres per day by 2025. The number of shale wells expected to be placed on production in the period is expected to increase to 215 by 2025 from 135 in 2016.

Overall marketable natural gas production in Alberta, which includes shale gas, increased for the second year in a row in 2015, growing by 2.2 per cent to 298.6 million cubic metres per day from 292.1 million cubic metres, due to the lag effect from high drilling levels in 2014.

At the end of 2015, the province had 31.3 trillion cubic feet (tcf) remaining established reserves of natural gas with ultimate potential (recoverable) of 223 tcf (excluding unconventional gas). The province has 1.8 billion barrels of remaining established reserves of crude oil, with ultimate potential (recoverable) of 19.7 billion barrels. ■

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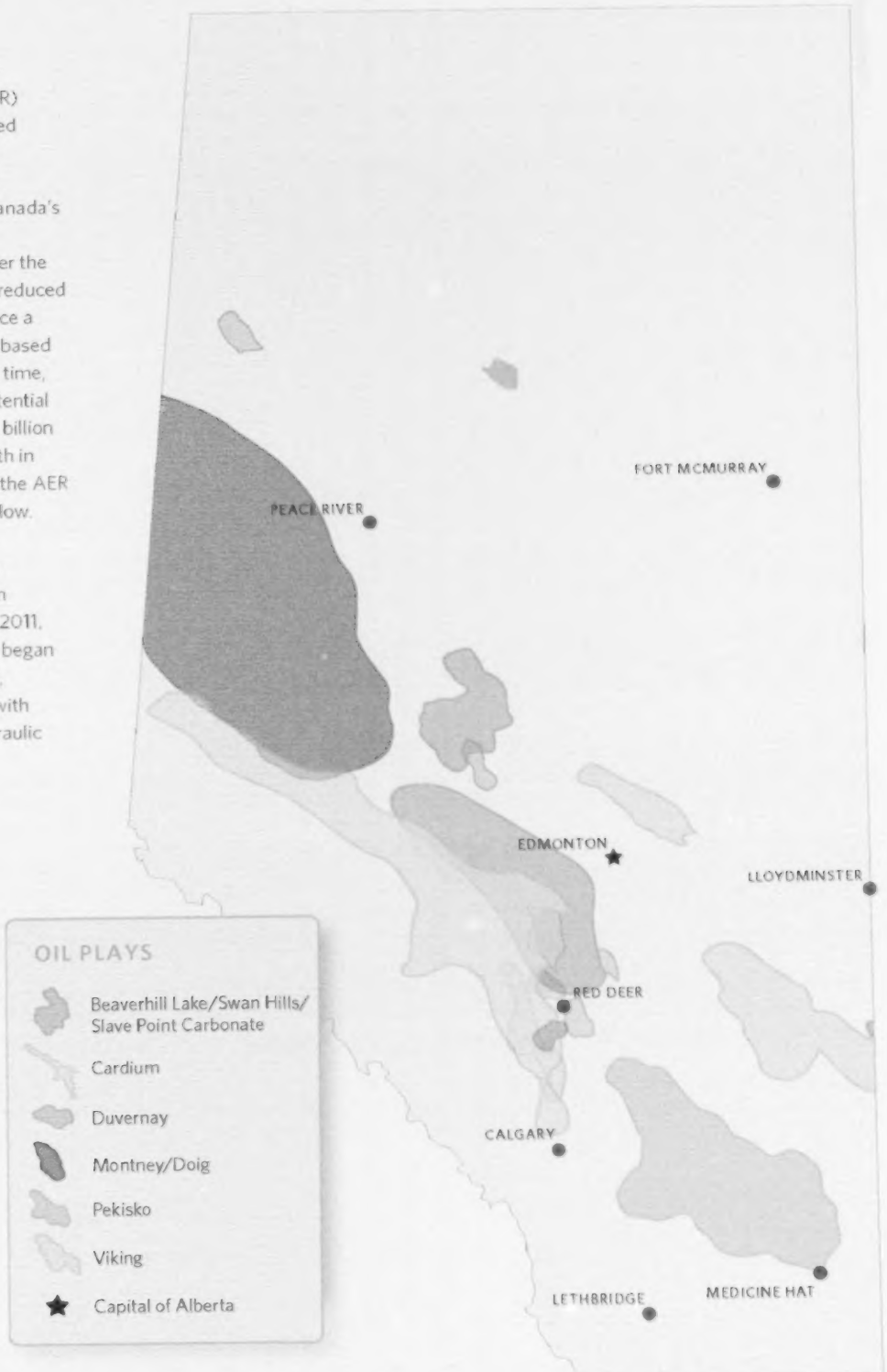
NOTE: This publication contains information about Alberta's oil and gas industry, excluding the oil sands. For information on the oil sands, please refer to the *Alberta Oil Sands Industry Quarterly Update* on this website.

OIL PLAYS

The Alberta Energy Regulator (AER) estimates the remaining established reserves of conventional crude oil in Alberta to be 1.8 billion barrels, representing about one-third of Canada's remaining conventional reserves.

Though the pace has slowed over the past year due to low oil prices and reduced activity, it's expected to resume once a market correction occurs. In 1994, based on the geological prospects at that time, the AER estimated the ultimate potential of conventional crude oil to be 19.7 billion barrels. Given recent reserve growth in low permeability, or tight oil plays, the AER believes that this estimate may be low.

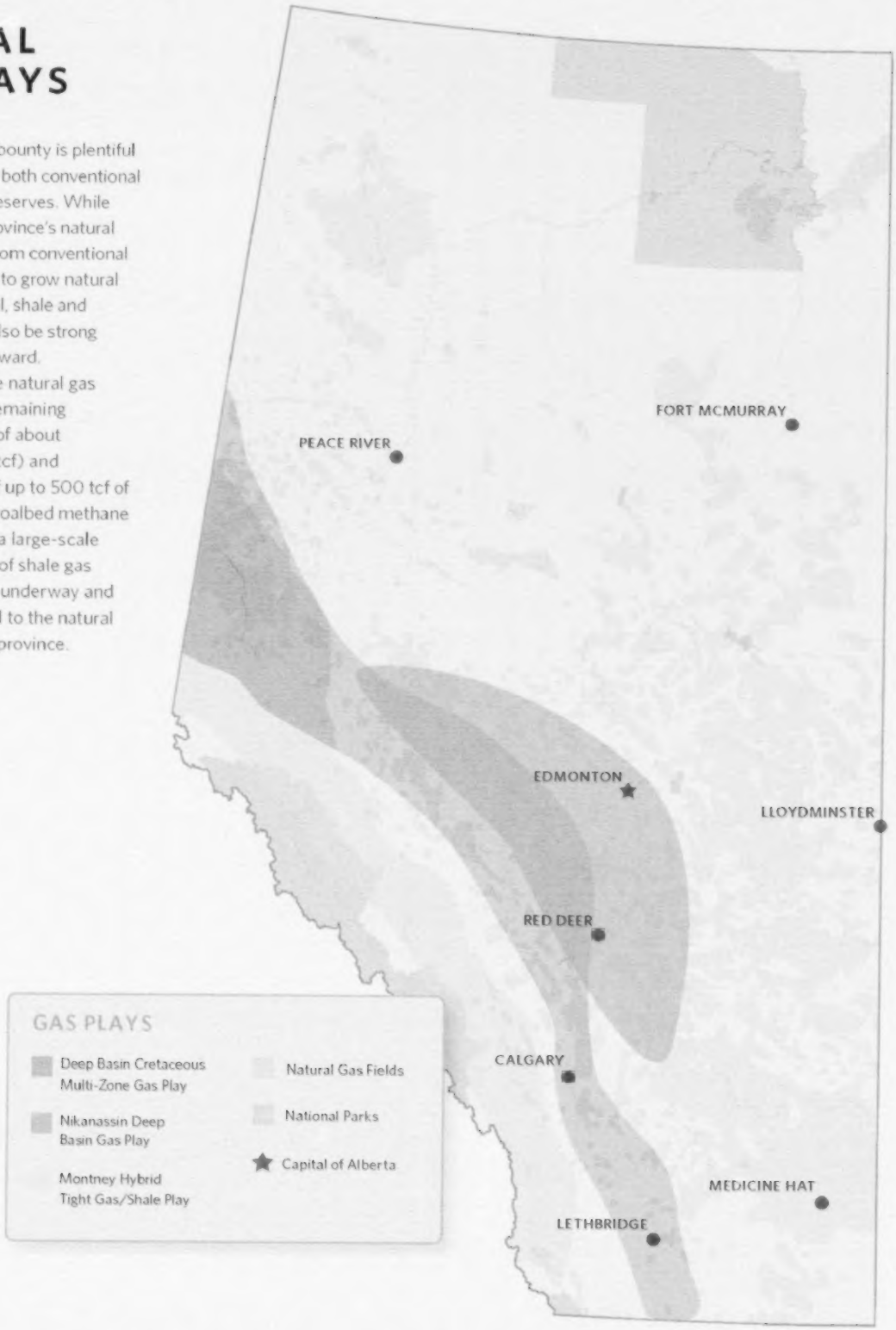
Starting in 2010, total crude oil production in Alberta reversed the downward trend that was the norm since the early 1970s. In 2010 and 2011, light-medium crude oil production began to increase as a result of increased, mainly horizontal, drilling activity with the introduction of multistage hydraulic fracturing technology.



NATURAL GAS PLAYS

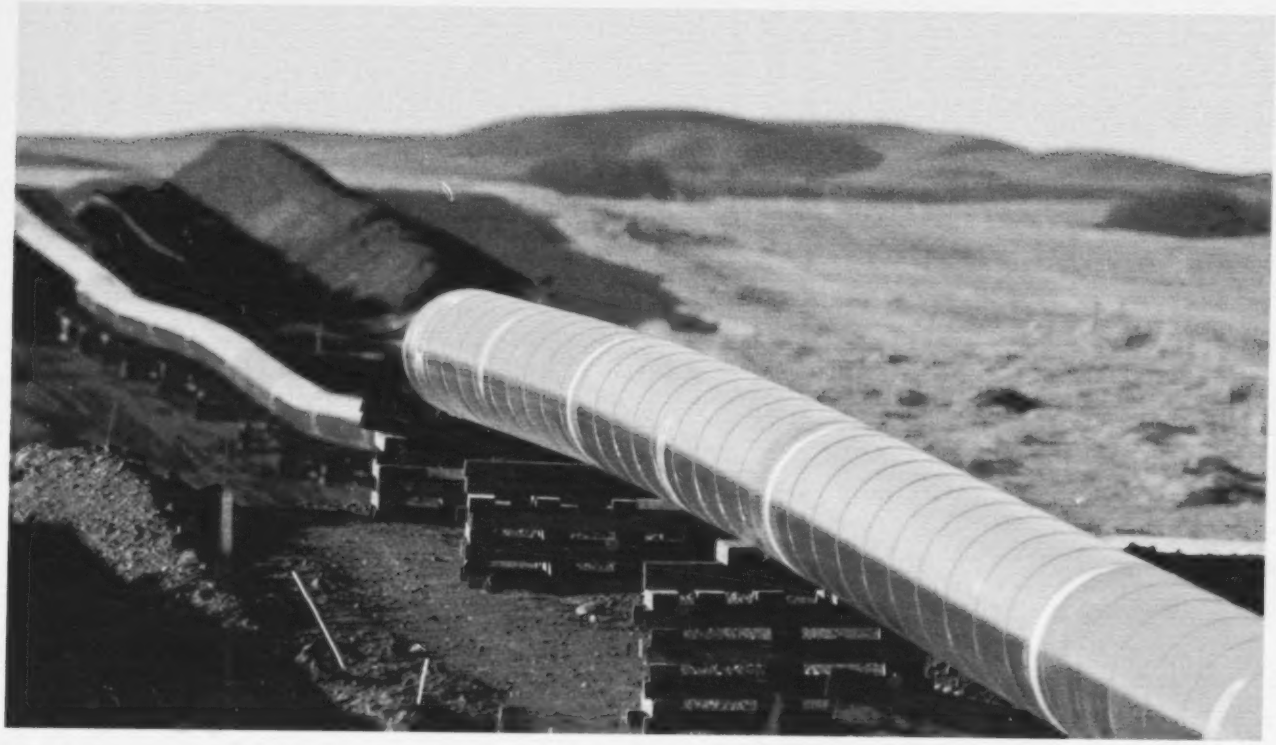
Alberta's natural gas bounty is plentiful and is produced from both conventional and unconventional reserves. While the majority of the province's natural gas is still produced from conventional sources, the potential to grow natural gas volumes from coal, shale and tight formations will also be strong contributors going forward.

Alberta has a large natural gas resource base, with remaining established reserves of about 33 trillion cubic feet (tcf) and estimated potential of up to 500 tcf of natural gas from the coalbed methane resource. In addition, a large-scale resource assessment of shale gas potential in Alberta is underway and could significantly add to the natural gas prospects for the province.



GOVERNMENT UPDATE

Alberta Government



ALBERTA WELCOMES FEDERAL APPROVAL OF TRANS MOUNTAIN AND LINE 3 PIPELINES

Alberta Premier Rachel Notley issued a statement following Prime Minister Justin Trudeau's approval of two major energy infrastructure projects on Nov. 29, 2016.

The federal government has approved Kinder Morgan's proposed Trans Mountain Expansion Project from Strathcona County, Alta., to Burnaby, B.C., as well as Enbridge's Line 3 Replacement Project, which connects Alberta to Wisconsin through Manitoba.

The two projects will increase Alberta's crude oil export capacity by about one million bbls/d.

Trudeau cited Alberta's Climate Leadership Plan as a key policy piece supporting the project approvals.

"We are getting a chance to break our land lock," Notley said. "We're getting a chance to sell to China and other new markets at better prices. We're getting a chance to reduce our dependence on one market, and therefore to be more economically independent. And we're getting a chance to pick ourselves up and move forward again."

Notley said that of equal importance, Canada is building the economy within a strong new national environmental policy. "We are getting out of coal by 2030. We are implementing an emissions cap in the oil sands. And we will all be phasing in a $50 carbon levy to help reduce emissions and to help finance a transition to a lower-carbon economy," she said. "We don't have to choose between the environment and building the economy. Canada is going to be a global leader on climate change. And our country will still create jobs and greater economic equality."

Both projects have been approved subject to binding conditions (157 for Trans Mountain and 37 for Line 3) that will address potential Indigenous, socio-economic and environmental impacts.

The Government of Canada says the $6.8-billion Trans Mountain Expansion will create 15,000 new jobs during construction by twinning the existing system. It will also provide access to global markets and generate significant direct economic benefits, including $4.5 billion in federal and provincial government revenues. ➤

GOVERNMENT UPDATE CONTINUED

The $4.8-billion Line 3 Replacement Project will replace 1,067 kilometres of existing pipeline from Hardisty, Alta., to Gretna, Man., to enhance its safety and integrity. The project will generate significant economic benefits, including $514.7 million in federal and provincial government revenues and 7,000 new jobs during construction. It also provides a vital link to the North American refinery market for Canadian oil.

The federal government has also directed the National Energy Board to dismiss Enbridge's Northern Gateway Pipelines project application. The project would have run from Alberta to Kitimat, B.C. Ottawa says it has determined that the project is not in the public interest, given that it would result in crude oil tankers transiting through the sensitive ecosystem of the Douglas Channel, which is part of the Great Bear Rainforest.

ALBERTA REDUCES DEFICIT FORECAST, ECONOMY SHOWS SIGNS OF STABILITY

Alberta's economic situation has improved slightly, according to the province's 2016-17 second-quarter fiscal update, but the government will finish the fiscal year with a deficit as ongoing low oil pricing continues.

According to the fiscal update released on November 28, Alberta now projects a 2016-17 deficit of $10.8 billion, which is $449 million higher than forecast at budget, largely due to the $520-million fiscal impact of the Wood Buffalo wildfire.

The West Texas Intermediate (WTI) oil price is forecast at US$45 per barrel, which is slightly higher than the WTI price of $42 per barrel previously forecasted in the budget.

While the province expects real gross domestic product (GDP) to decline by 2.8 per cent in 2016, due partially to the impacts of Wood Buffalo wildfires earlier this year, indications such as drilling activity and oil production suggest stabilizing business activity. In addition to this, after three consecutive months of gains totalling 25,000 jobs, there was a pullback of 12,800 jobs in November. Employment still remains up by about 12,000 from the low in July.

The government anticipates real GDP will recover modestly in 2017, growing by 2.3 per cent thanks largely to rebounding oil prices and production, public infrastructure investment and Fort McMurray reconstruction.

"We are sticking with our plan, which is to bring down the deficit over time, to invest in capital infrastructure, to help Albertans out through this downturn and to work to make sure we are diversifying the economy," said President of the Treasury Board and Finance Minister Joe Ceci.

Minister Ceci also emphasized that while the government is taking the "right approach" and positive pipeline announcements will positively impact the economy, uncertainty makes prudence a necessity, which is why the risk adjustment will not change. "I am positive around all of that, but the risk adjustment stays in the budget with regard to the $700 million as a result of OPEC or volatility in the oil price, international price."

OIL SANDS EMISSIONS CAP DRIVES INNOVATION

In November 2016, Shannon Phillips, Alberta's Minister responsible for the Climate Change Office, introduced the Oil Sands Emissions Limit Act. If passed, the act will cap oil sands greenhouse gas (GHG) emissions to 100 megatonnes per year.

The GHG cap, which was originally announced with the support of several industry and environmental leaders in November 2015, will not obligate oil sands producers until a regulatory system is designed and implemented, the government says.

"Our support for the oil sands emissions limit and climate policy leadership reflects the ongoing collective support for responsible development of the oil sands," read a statement from the Industry Caucus of the Oil Sands Advisory Group, consisting of Canadian Natural Resources Limited, Cenovus, ConocoPhillips Canada, MEG Energy, Shell Canada, Statoil Canada and Suncor. "We believe that by investing in technology and innovation, we can produce oil from the oil sands on a globally carbon competitive basis. The Alberta Climate Leadership Plan emissions limit acts as an incentive to continually improve our performance in a carbon-constrained world. We look forward to providing advice on the effective implementation of the emissions limit."

The cap is a cornerstone of Alberta's Climate Leadership Plan, allowing the oil sands industry to grow sustainably while repairing the province's reputation. Limits on oil sands emissions will provide an incentive for companies to invest in GHG reduction as well as innovative technologies that will pave the way for Alberta's energy industry to lead in a low-carbon future.

Alberta's climate plan and the oil sands emissions cap have been lauded by U.S. President Barack Obama.

Minister Phillips promoted the plan at the United Nations climate conference in Marrakech, Morocco, in November 2016. This plan will enhance Alberta's reputation for developing pragmatic solutions to climate change.

The legislation will provide certainty for investors, drive innovation among producers to create new solutions for energy extraction, and help protect jobs and create new ones while tackling emissions and protecting the health of future generations. ■

WHAT'S NEW IN THE OIL & GAS INDUSTRY

POWER PLANT CONVERSIONS COULD BE A BOON TO ALBERTA NATURAL GAS PRODUCERS

The conversion of about one-half of Alberta's 18 coal-fired power plants to natural gas could potentially reduce capital costs by about 90 per cent compared to the cost of new gas combined-cycle plants, says a United States energy expert.

Coal-to-gas conversions, in which the burners in existing boilers are changed out, will save close to $10 billion of capital overall, about 10 per cent to 15 per cent of the cost of building new combined-cycle gas plants, Terry Boston told a November 24 news conference at which the Alberta government announced its plans for the transition from coal to natural gas and renewable power generation.

"It would allow us to use a resource that is local there in Alberta, the natural gas, and the natural gas pipeline system that is quite robust," he said.

The retired head of PJM Interconnection, one the world's largest electrical grids, was hired by the government to work with Alberta Energy and the Alberta Electric Systems Operator in the phase-out of coal to cleaner energy sources.

The build-out of more than 8,000 megawatts of natural gas or cogeneration along with 5,000 megawatts of new renewable capacity at an estimated cost of $20 billion to $30 billion will be needed by 2030 to replace the retiring coal plants and to meet economic growth in the province, said Boston.

"I would hope to see early conversion of some of the coal fleet to natural gas and early build-out of natural gas to firm up the wind, given the blessing that Alberta has about wind and renewables and natural gas," he said.

TOURMALINE TO INCREASE SPENDING IN 2017

Tourmaline Oil announced November 15 that it plans to execute a $1.35-billion capital program for 2017, based on the acquisition of Alberta Deep Basin and northeastern British Columbia Montney assets from Royal Dutch Shell.

Tourmaline announced on October 20 it had agreed to acquire the Shell assets for $1.37 billion, including production of 24,850 boe a day, estimated proved plus probable reserves of 473.5 million boe, 2,147 future drilling locations and "substantial" midstream infrastructure.

The acquisition closed on November 30.

Thanks to the Shell deal, Tourmaline's $1.35-billion budget for 2017 is a significant increase over its revised 2016 budget of $825 million.

With the expansion of its operated drilling fleet to 14 rigs in the fourth quarter, Tourmaline said it now expects full-year 2016 spending of $825 million. The company's previous 2016 budget was $775 million.

Meanwhile, a combination of weather-related activity delays, third-party plant turnarounds, natural gas liquids volume reductions due to a fire-related curtailment at a third-party deep cut facility, and continued firm-service cutbacks in Alberta and B.C. led to third-quarter output of 169,347 boe a day, down eight per cent from the second quarter of this year, but up from 150,297 boe a day from the third quarter of 2015.

Tourmaline is still on track to achieve full-year average production of 190,000–195,000 boe a day, for year-over-year growth of about 25 per cent.

Tourmaline has more than 100 new wells coming on production in the second half of this year. Almost all will now start up in the fourth quarter.

So far in the fourth quarter, the company has brought more than 30,000 boe a day of new production on stream.

The company expects to reach its previous 2016 exit production target of 210,000–215,000 boe a day in late November. Also, full-year 2017 production is expected to average 225,000 boe a day, up from 215,000 boe a day forecast previously, not including the Shell acquisition.

With the Shell assets, Tourmaline expects 2017 production to average between 250,000 and 260,000 boe a day, representing year-over-year growth of over 30 per cent. The company expects further production growth of 20–25 per cent in 2018.

PEYTO ALSO INCREASES CAPITAL SPENDING PLANS

Peyto Exploration & Development has announced a preliminary 2017 capital program of between $550 million and $600 million, up from estimated 2016 capital spending of $475 million.

This includes the drilling of 145–160 wells (average of 94 per cent working interest), along with associated pipeline and facility investments to accommodate the growing production base. ➤

WHAT'S NEW IN THE OIL & GAS INDUSTRY CONTINUED

On a third-quarter results conference call, the company provided a breakdown of drilling planned for its two focus areas—Brazeau and Sundance in Alberta's Deep Basin.

"We have a drilling program that's focused a little more for the next year down in the Brazeau area. We will add a fourth drilling rig down there in the new year, and we'll expect to drill about 60 wells in total," said Jean-Paul Lachance, Peyto's vice-president of exploitation.

"That's our biggest program yet for that area," Lachance told analysts during the call.

He said the bulk of the Brazeau program will focus on the deeper, prolific Notikewin and Wilrich formations "which undoubtedly will confirm additional faulted Cardium locations."

Lachance added: "We'll have a large presence in the greater Sundance area with significant infrastructure in the way of plants, pipelines, roads, existing wellsites to help keep our costs down.... And we'll drill approximately 90 locations there to keep our plants full and running efficiently."

He said the Wilrich formation continues to provide good returns and will be Peyto's primary focus again in 2017 at Sundance, "but we'll also continue a steady diet of Notikewins on the heels of that program."

Based on 2016 results, Falher drilling is expected to be a small part of the Sundance program for 2017, Lachance said.

ALBERTA OIL AND GAS COMPANIES HAVE CUT JOBS BUT NOT WAGES: ATB

While it is estimated that about 40,000 people have been laid off since the oil price collapsed in 2014, the people who are still employed are still making a lot of money, noted ATB Financial in late November.

"In September of this year, the average weekly earnings for an employee in Alberta's resource sector was $2,287—close to the record high and nearly 25 per cent higher than five years ago. It's not the cost-cutting measures one would expect," ATB said in its *The Owl* newsletter.

"Rather than cutting wages, energy companies have been eliminating workers. Over the last two years—roughly from the time oil prices started to fall—Alberta's oil companies have reduced employment by 29 per cent."

ATB said this is evidence of two things.

"The first is that Alberta has lost a lot of high-paying jobs and that is taking a toll on the economy. The second thing we learn is that energy companies are opting to cut staff, not wages. If you're still employed by an oil company in this province, you still likely enjoy the highest average earnings in the country."

FEWER SEISMIC FIRMS COULD TAINT RECOVERY

While raising few problems in the current downturn, a dwindling stable of Alberta seismic firms could pose problems later, when a recovery starts to take shape, according to seismic industry leaders.

For seismic acquisition firms in particular, activity in western Canada has been at a low ebb for the past two years—three, according to some executives. When oil and gas producers once again turn to exploration, as they likely will, the fear is that the ensuing rush will overwhelm the few surviving firms, leaving many producers hanging.

"Our initial [concern] is that there won't be enough [acquisition contractors] left to put out the number of crews that could be required," said Mike Doyle, head of the Canadian Association of Geophysical Contractors. While the market will eventually catch up, a key question is just how long that will take, he added.

Doyle estimated that in 2002, Alberta had about 20 seismic acquisition companies. By 2006, the number was down to 15, and it has fallen steadily ever since. Today, only a handful survive, compared to the many that worked the rural landscape 20 years ago. For the roughly five Calgary-based contractors remaining, the world is a different place since the 1990s.

In those days, a local industry supplier tracked Alberta's seismic crews, sending out a weekly fax indicating which crews were active and where. At the time, so many crews were at work, the active crew list typically ran to several pages, an industry veteran recalled.

"It wasn't uncommon to have 110 crews on that [list] in the 1990s," said Forrest Burkholder, vice-president of North American operations for seismic acquisition firm SAExploration.

As it turns out, those years were likely the high watermark for Alberta's seismic contractors over the past 30 years. ■

TECHNOLOGY UPDATE

ALBERTA COMPANY ADVANCES COMPLETIONS TECHNOLOGY

Calgary-based Stage Completions says it broke a Montney drilling record in November.

Operating for its 10 per cent owner Blackbird Energy near Grande Prairie, Alta., Stage said it completed the highest tonnage and rate fracture stimulation (up to 10 cubic metres per minute, or 63 barrels per minute) ever completed in a 4.5-inch monobore Montney well without coil tubing assist.

"On average, each stage was completed in approximately one hour, with the fastest stage taking only 45 minutes. This achievement with respect to pumping time and efficiency substantially reduced Blackbird's direct and indirect costs, in addition to its social and environmental impact," Stage said.

The company's system runs a dissolvable ball on a collet that activates sliding sleeves, featuring a constant inside diametre wellbore that can be cemented in place in order to allow for longer laterals, tighter spacing, higher pump rates and higher tonnages.

Pinpoint fracturing capability is anticipated to increase expected ultimate recovery, improve water management and provide continuous operations with deployment under pressure capability, Stage said.

Since the company was launched in late May, it said its technology has been successfully installed and tested in three wells: Blackbird's Cardium water disposal well in July, an Eagle Ford well in September and Blackbird's Montney well in November.

Stage's management is currently in negotiations for deployment in every major unconventional resource by the end of the first quarter of 2017, the company said in a press release. As well, a Stage system is scheduled to be shipped to China in the near term and deployed by the end of January.

CLEAN TECH GRANTS AWARDED

The Shell Canada Quest Climate Grant has awarded three Canadian clean technology innovations with $50,000 per project to recognize their efforts in helping to combat climate change.

The recipients, located in Calgary, Kitchener and Toronto, were identified based on their unique business and/or product concept and their commitment to working on promising climate change innovations—whether they are about energy efficiency and savings, behavioural or social change, or clean energy initiatives.

Michael Crothers, Shell Canada president and country chair, said: "For Canada to achieve its climate change targets, our society will need bold new ideas and smart thinking from all Canadians. The exceptional young entrepreneurs receiving this year's Quest Climate Grant have shown us that there are many ways to tackle what can seem like a daunting challenge. Innovation is alive and well in Canada, and together, we can thrive economically while making real progress toward our environmental goals."

The Quest Climate Grant program was started in 2015 to mark the start of the Quest carbon capture and storage project in Alberta, which recently celebrated a significant one-year milestone: capturing and safely storing more than one million tonnes of CO_2 from Shell's oilsands operations in its first year operating.

UNIVERSITY OF CALGARY OPENS UPGRADED ENGINEERING COMPLEX

The expansion phase of the Schulich School of Engineering at the University of Calgary is now complete after the $174-million Canadian Natural Resources Limited Engineering Complex officially opened on November 15.

The Government of Alberta and the Government of Canada came together with Canadian Natural Resources Limited and community partners to create valuable new space for teaching, learning and research. This renovation and expansion project is seen as a significant advancement for the future of this province and this country.

This expansion and renovation project adds 18,300 square metres to the engineering complex and 11,000 square metres of renovations within the Schulich School of Engineering. It provides capacity for up to 400 additional engineering students.

The building opened to students in September 2016 and featured new study spaces, two floors of research labs and an expanded student lounge. The engineering expansion also includes interactive design labs to foster hands-on learning and practical skills to help students develop new inventions, conceive start-up companies or create inspiring technologies. ■

LABOUR UPDATE

OIL AND GAS JOBS DECLINE, BUT WILL GROW AGAIN IN THE FUTURE

As many as 24,500 jobs in Canadian oil and gas could be lost this year as producers and service providers continue navigating the painful pricing downturn.

Calgary-based PetroLMI says ongoing cost cutting, mergers and acquisitions and bankruptcies continue to threaten the labour market in a sector that already shed 28,000 jobs between 2014-15.

The industry labour market resource says there are currently about 198,300 people directly employed in oil and gas across Canada, down from a record 226,000 in 2014.

Despite the current depressed market, PetroLMI says there is some hiring occurring for select roles. Additionally, moderate increases to oil prices anticipated through 2020 are expected to also moderately increase available jobs. Age-related attrition will also contribute to a tighter market going forward.

The group says that companies, particularly service providers, may be challenged to fill roles in the future with a labour pool soured by recent mass layoffs.

Here are PetroLMI's 10 top jobs with the greatest hiring needs between now and 2020:

1. Oil and gas well drillers, servicers, testers and related workers
2. Supervisors and contractors, oil and gas drilling and service
3. Managers in natural resources production
4. Heavy equipment operators-except crane
5. Power engineers and power systems operators (steam ticket required)
6. Purchasing agents and officers
7. Oil and gas drilling, servicing and related labourers
8. Geologists and geophysicists
9. Petroleum, gas and chemical process operators (no steam ticket required)
10. Oil and gas well drilling workers and service operators

LABOUR FORECAST HELPS ALBERTANS GET "FUTURE READY"

The province's *Occupational Demand and Supply Outlook, 2015-2025* helps employers, students, workers and post-secondary institutions plan for labour-market needs.

Released in November, the latest outlook forecasts that 401,000 jobs will be created by 2025, while 352,000 workers will join the labour force by then. Even with the economic challenges caused by the drop in the global price of oil, Alberta's long-term labour demand is expected to outgrow supply by 49,000 workers over the next 10 years.

"In these challenging economic times, the Alberta government is committed to providing up-to-date labour-market information to help Albertans plan for new career opportunities. The *Demand and Supply Outlook* is an important tool to help businesses and workers prepare for future labour market needs," said Christina Gray, Minister of Labour.

"Good-quality labour-market information is important in our work with students as we help them make career choices and target their job search. Sifting through the constant flow of labour-market information can be a challenge, but having comprehensive information from a credible source is extremely valuable," said Joan Schiebelbein, director, University of Alberta Career Centre.

Examples of occupations that could have labour shortages by 2025:

- Managers in construction and transportation (shortage of 1,386 workers);
- Computer and information systems professionals (shortage of 1,426 workers);
- Nurse supervisors and registered nurses (shortage of 5,434 workers);
- Medical technologists and technicians (shortage of 2,322 workers); and
- Sales and service supervisors (shortage of 1,145 workers).

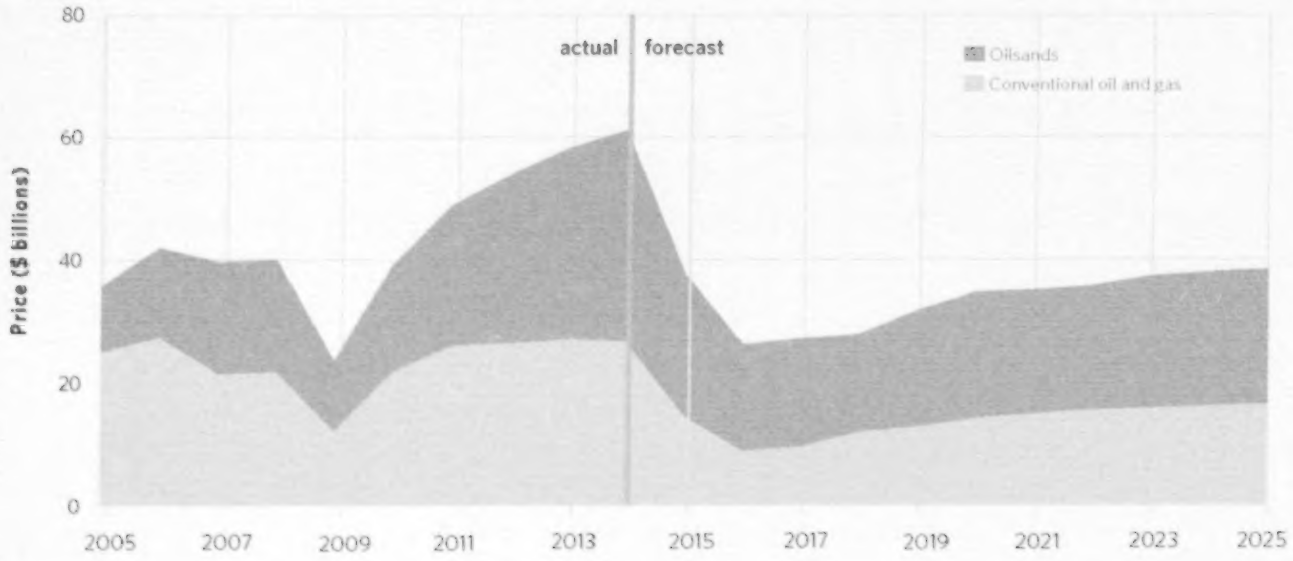
Alberta leads Canada in providing high-quality data and labour-market information to help employers, students, workers, post-secondary institutions and industry associations begin working to meet the province's needs in high-demand occupations.

The outlook forecasts labour-market shortages or surpluses for more than 250 occupations over the next decade.

The forecast helps inform the Government of Alberta's Future Ready effort to coordinate education and training from kindergarten to work so all Albertans have the knowledge and skills they need to succeed in a changing economy. ■

OIL & GAS STATISTICS

INVESTMENT IN ALBERTA OIL AND GAS SECTOR

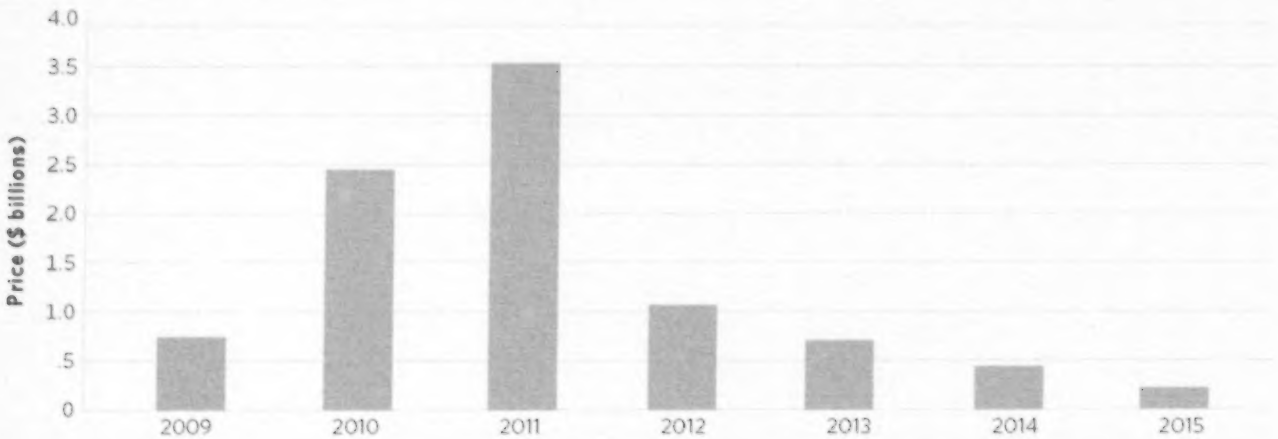


Historical values sourced from the Canadian Association of Petroleum Producers

Source: GWN

ALBERTA CROWN LAND SALES

Petroleum and natural gas rights, excluding oil sands



Source: Alberta Energy Regulator

STATISTICS CONTINUED

DRILLING RIG COUNT BY PROVINCE/TERRITORY

Nov. 29, 2016

	ACTIVE	DOWN	TOTAL	ACTIVE
Western Canada				(Per cent of total)
Alberta	149	309	458	33
Saskatchewan	46	80	126	37
British Columbia	25	44	69	36
Manitoba	1	10	11	9
WC total	**221**	**443**	**664**	**33**

Source: CWN

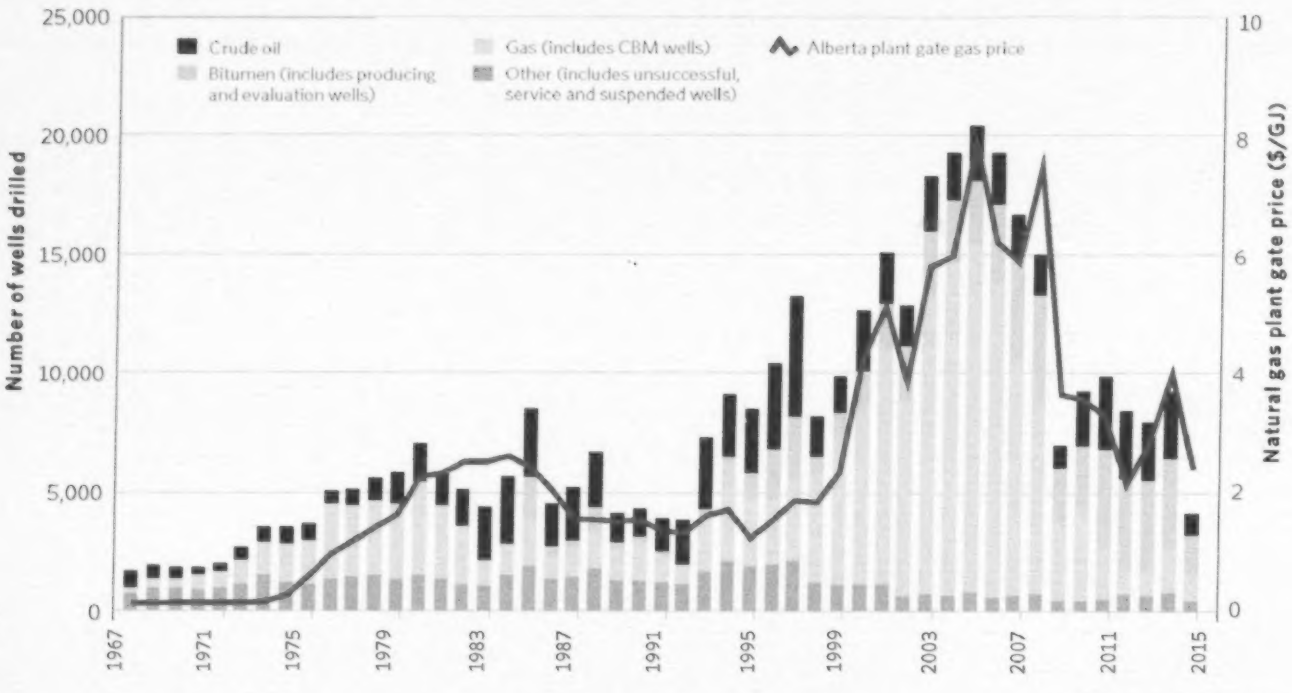
OIL AND GAS WELL COMPLETIONS BY PROVINCE

November 2016

	OIL WELLS		GAS WELLS	
Western Canada	NOV '15	NOV'16	NOV'15	NOV '16
Alberta	151	51	94	26
British Columbia	8	8	84	5
Manitoba	9	3	0	0
Saskatchewan	94	111	0	0
Total	**262**	**173**	**179**	**31**

Source: CWN

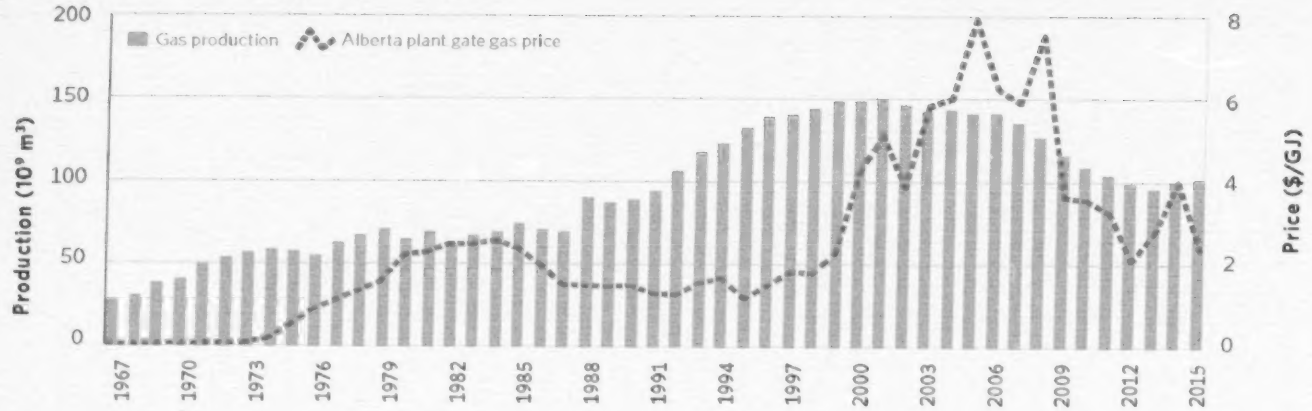
DRILLING ACTIVITY IN ALBERTA, 1967-2015



Source: Alberta Energy Regulator

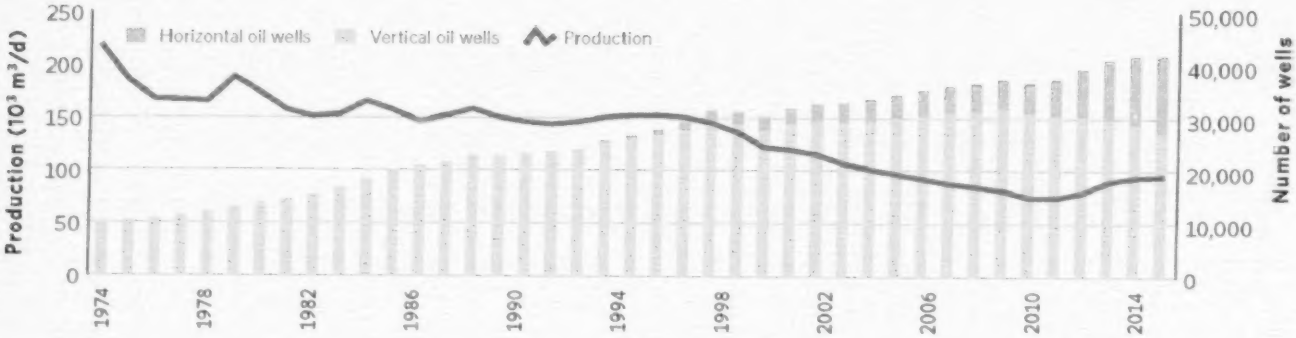
STATISTICS CONTINUED

ALBERTA MARKETABLE GAS PRODUCTION



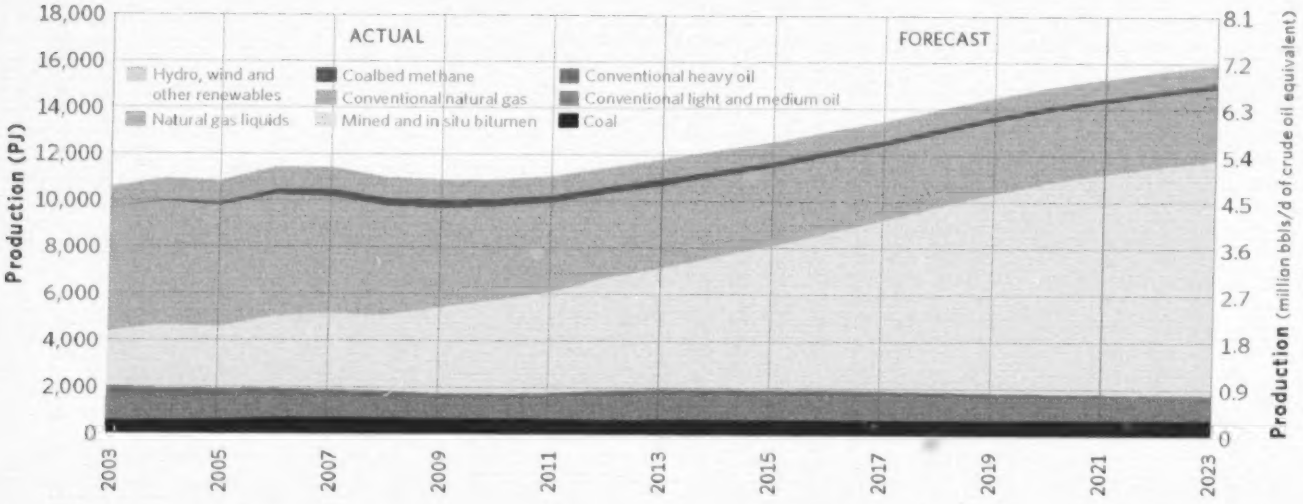
Source: Alberta Energy Regulator

ALBERTA CRUDE OIL PRODUCTION AND PRODUCING WELLS



Source: Alberta Energy Regulator

TOTAL PRIMARY ENERGY PRODUCTION IN ALBERTA



Source: Alberta Energy Regulator

THE **ENVIRONMENTAL** FILE

TRUMP VICTORY WILL NOT ALTER ALBERTA'S CLIMATE PLAN

The likelihood of United States government inaction on climate change over the next four years under President-elect Donald Trump should not affect the competitiveness of the Canadian energy industry, says Alberta Premier Rachel Notley.

"We are not terribly concerned about that issue [competitiveness] and there are strong, strong, compelling reasons for moving forward on our climate leadership plan, and the decisions of the voters south of the border are not things that should appropriately factor into that," she told a news conference.

According to Notley, the Alberta government never factored into its climate change plan the likelihood of the U.S., even under the Barack Obama administration, moving forward on significant climate change initiatives, particularly around pricing carbon.

"Our climate change leadership plan was designed and modelled on the basis of Alberta acting alone with amendments and considerations built into the plan for our more trade-exposed industries, and I think that remains the case now. It also makes sense—in Canada and all around the world—to act on climate change, to phase out coal pollution and to phase in clean, renewable energy," she said.

"We are actually ahead of the game here in Alberta relative to where we were a year ago when we first announced the climate leadership plan because the federal government is talking within three or four years to bringing other jurisdictions in Canada to where Alberta is, so it would actually improve the whole competitiveness issue."

ALBERTA TARGETING AN ADDITIONAL $33 MILLION FROM INDUSTRY TO REDUCE METHANE EMISSIONS

The Alberta government is targeting an additional $33 million from the industry-supported Emissions Reduction Alberta (ERA) to aggressively reduce methane emissions as outlined in its Climate Leadership Plan.

ERA, formerly the Climate Change and Emissions Management Corporation, will use the money to seek out and advance technologies that support Alberta's commitment to reduce methane emissions by 45 per cent by 2025.

"Innovation is vital to the global issue of climate change," said Environment and Parks Minister Shannon Phillips, the minister responsible for the climate change office. "This investment in innovation supports our climate leadership goals. By developing the next generation of innovative and clean technology, we build a sustainable and diversified economy that attracts investment, creates jobs, expands market access and reduces greenhouse gas emissions."

ERA is earmarking a total of $40 million to help advance technologies to reduce methane emissions in Alberta. It will provide successful applicants up to a maximum of $5 million and projects will be selected through a competitive process.

The funding targets medium- and long-term opportunities to reduce methane emissions in the oil and gas, agriculture and landfill sectors, as well as projects to improve methane detection and quantification.

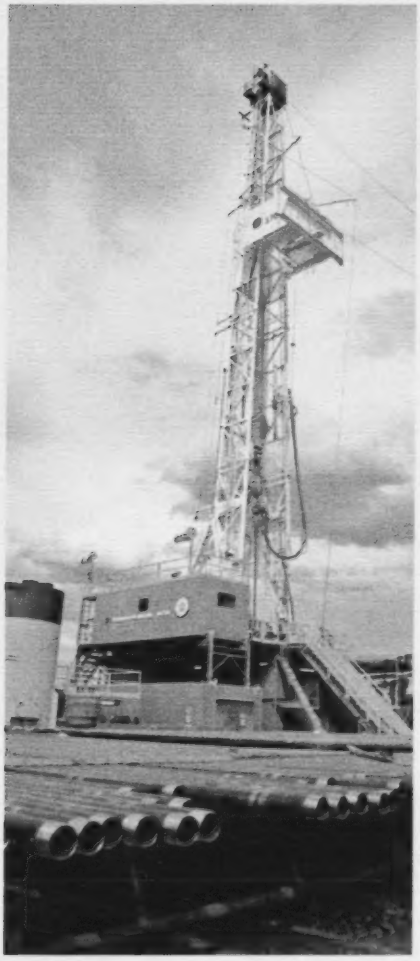
Government-provided grants to ERA come from Alberta's large emitters who choose to pay into the Climate Change and Emissions Management Fund as a compliance option if they are unable to meet emissions reduction targets.

"ERA is continuing our work with industry and other stakeholders to identify, invest in and accelerate ideas that reduce greenhouse gas emissions," said Kathleen Sendall, board chair, ERA. "We are advancing the technologies Alberta needs for a lower carbon future and that industry needs for continued economic success."

"New technologies are essential to achieve the outcomes we seek in the Alberta Climate Leadership Plan," added Gordon Lambert, chair, Climate Technology Task Force. "By seeking out projects to reduce methane emissions, Alberta is maintaining momentum and demonstrating a commitment to take action on innovation."

Since 2009, ERA has committed more than $300 million to more than 100 projects with a combined value of more than $2 billion. For every dollar ERA invests, more than another $5 is also invested. ■

INBOUND/OUTBOUND **INVESTMENT**



THERE'S A NEW BREED OF CHINESE INVESTORS LOOKING FOR M&A OPPORTUNITIES: GMP FIRSTENERGY

After spending US$73 billion on international oil and gas acquisitions between 2011-13, investment from China's state-owned oil companies has ground to a halt.

However, according to analysts with GMP FirstEnergy, China is still knocking at the door of the Canadian merger and acquisition (M&A) market—it's just that the companies with the money are new and diverse.

GMP FirstEnergy was an adviser to Bankers Petroleum during its sale to China's Geo-Jade Petroleum, a C$575-million transaction that closed at the end of September.

According to GMP FirstEnergy, Geo-Jade is characteristic of the new players in Chinese M&A in that it is a smaller company with a minimal international profile. It also raised equity on the Chinese market in order to fund its Bankers buy versus using a state-owned wallet.

"Smaller private players, often without a background in exploration and production, have been increasingly active in the M&A market for upstream assets," analysts Stephane Foucaud and Taro Kiley wrote in a research note released November 22.

"These industry participants are often cash-rich and looking for growth. They also benefit from a domestic capital market eager to fund growth and pay more for certain assets than Western alternatives."

The "Big Three" Chinese national oil companies—Sinopec, China National Petroleum Corporation and CNOOC—have had their wings clipped by internal affairs and do not seem to have the incentive to make acquisitions, wrote Foucaud and Kiley.

They cite anti-corruption investigations, management changes and ongoing audits at each of the three companies that followed drastic changes in China's central government in early 2013, as well as increased accountability for managers.

"Generating attractive returns is important and, given the Big Three's poor track record with overseas acquisitions, we can understand why there is limited incentive and appetite for new acquisitions."

So who are the new players to watch? GMP FirstEnergy puts them into three categories: real estate and manufacturing/industrials, midstream and downstream, and oilfield services.

CANADIAN PRODUCERS GAINING GROUND IN MEXICO

A spokesperson for an Alberta-based oil and gas producer that has moved into Mexico, as the country ends the 80-year oil and gas industry monopoly of Petróleos Mexicanos, is hailing a recent report from the International Energy Agency (IEA) that says the reform will prevent a loss to the country's economy totalling US$1 trillion by 2040.

An executive with Calgary-based International Frontier Resources (IFR) says the conclusions of the IEA report, which forecasts "robust economic growth in the coming decades" as a result of the reforms, support his company's decision to become among the first publicly listed energy companies to develop oil and gas in the country since the 1930s.

Steve Hanson, president and chief executive officer of IFR, which is partnered with Mexico City-based petrochemical giant Grupo Idesa, S.A. in Tonalli Energia, said the IEA statement confirms what he already believes.

"Since the announcement of the energy reform, IFR has strongly believed that the denationalization of the energy sector is unprecedented," he said in an emailed response. "Massive foreign investment is needed in Mexico to revitalize the oil and gas sector," he said.

"Canada's greatest export to Mexico is qualified people and services from Canada's oilpatch, with a focus on new technology and advanced engineering. We are one of the first movers and aim to be a leader in partnership with Mexico and its people. As the first Alberta company to be awarded an oil and gas field in Mexico, we are a key participant." ■

CONTACTS

INDUSTRY ASSOCIATIONS

Alberta Land Surveyors' Association www.alsa.ab.ca
Canada's Natural Gas www.canadasnaturalgas.ca
Canadian Association of Geophysical Contractors www.cagc.ca
Canadian Association of Oilwell Drilling Contractors www.caodc.ca
Canadian Association of Petroleum Producers www.capp.ca
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Gas Processing Association Canada www.gpacanada.com
Petroleum Services Association of Canada www.psac.ca
Petroleum Technology Alliance Canada www.ptac.org

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